

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is requested. Claims 25-59 are in this application. Claims 1-24 have been cancelled. Claims 25-59 have been added in this amendment to alternately claim the present invention. Applicant notes that independent claim 25 and dependent claims 26-30 appear to read on the embodiments shown in FIGs. 5-7, dependent claims 31-32 appear to read on the embodiments shown in FIGs. 6 and 7, and dependent claims 33-36 appear to read on the embodiments shown in FIGs. 5 and 6.

In addition, independent claim 39 and dependent claims 40-43 appear to read on the embodiments shown in FIGs. 5-7, dependent claims 44-45 appear to read on the embodiments shown in FIGs. 6 and 7, and dependent claims 46-39 appear to read on the embodiments shown in FIGs. 5 and 6.

Further, independent claim 52 and dependent claims 53-54 appear to read on the embodiments shown in FIGs. 5-7, and dependent claim 55 appears to read on the embodiments shown in FIGs. 5 and 6. Independent claim 56 and dependent claims 57-58 appear to read on the embodiments shown in FIGs. 5-7, and dependent claim 59 appears to read on the embodiments shown in FIGs. 5 and 6.

Thus, applicants believe that claims 25-30, claims 39-43, claims 52-54, and claims 56-58 are generic claims, and that dependent claims 31-38, 40-51, 53-55, and 57-59 are species claims written in dependent form.

In the office action mailed August 28, 2002, the Examiner argued, to applicants' assertion of having generic claims, that it is immaterial whether a generic claim can be formulated to cover two patentably distinct inventions.

Applicants disagree and note that 37 CFR 1.141 (a) recites:

“[T]wo or more independent and distinct inventions may not be claimed in one national application, except that more than one species of an invention, not to exceed a reasonable number, may be specifically claimed in different claims in one national application, provided the application also includes an allowable claim generic to all the claimed species and all the claims to species in excess of one are written in dependent form.”

Thus, a reasonable number of embodiments or species may be claimed in one application provided there is a generic claim, and all of the species claims are written in dependent form. In the present case, the Examiner has identified three embodiments or species, and three embodiments or three species would appear to be a reasonable number.

As noted above, applicant believes that claims 25-30, claims 39-43, claims 52-54, and claims 56-58 are generic claims. A generic claim should read on each of the embodiments or species, but the fact that a claim does so read is not conclusive that it is generic. (See MPEP 806.04(d) Definition of a Generic Claim.) In the present case, claims 25-30, claims 39-43, claims 52-54, and claims 56-58 read on the embodiments shown in FIGs. 5-7.

A generic claim should include no material element additional to those recited in the species claims. Id. In the present case, generic claims 25-30, claims 39-43, claims 52-54, and claims 56-58 do not appear to include any material element that is additional to those recited in the species claims.

Further, a generic claim must comprehend within its confines the organization covered in each of the species. Id. In the present example, the organization covered by each species is the organization of the p-n junction. In addition, claims 52-55 are method claims of claim 26, and claims 56-59 are method claims of claim 40. As a result, generic claims 25-30, claims 39-43, claims 52-54, and claims 56-58

operate the same. Thus, claims 25-30, claims 39-43, claims 52-54, and claims 56-58 satisfy the requirements of generic claims.

The third requirement of 37 CFR 1.141 (a) is that all of the species claims are written in dependent form (or include all of the limitations of the generic claim). In the present case, species claims 31-38, 40-51, 53-55, and 57-59 are written in dependent form.

Thus, since 37 CFR 1.141 (a) allows a reasonable number of embodiments or species to be claimed in one application provided there is a generic claim, and all of the species claims are written in dependent form, and further since claims 25-59 satisfy each of these requirements, claims 25-59 are properly under consideration.

Applicants wish to bring the Examiner's attention to the title listed in the Declaration filed with the application. The title listed in the declaration incorrectly recites "Triggering BJT ESD Protection Circuit with Double Collector Contact." The correct title is "Trim Zener Using Double Poly Process." This title is correctly recited in the filing receipt.

Although the title is incorrectly recited, applicants note that the attorney docket number on the Declaration is correct, the inventive entities are correctly identified, and the Declaration indicates that it refers to the attached specification which is correctly titled. Applicants respectfully request that the Examiner indicate whether the Declaration is believed to be defective and needs to be resubmitted, or whether the Declaration is acceptable.

The Examiner objected to the drawings because FIGs. 5 and 6 do not include a label for the substrate oxide. Applicants believe the Examiner is referring to the "T" shaped trench isolation regions, and have amended FIGs. 5 and 6 as shown in red on the attached copies of FIGs. 5 and 6 to add reference labels 53 and 115, respectively.

Applicants also propose amending a number of additional features as shown in red on FIGs. 5 and 6, including extending lead lines, changing arrow heads to

reference lines, adding a horizontal line to close contacts 90 in FIG. 5, and adding a layer of silicide 122 over poly 1 region 100 shown in FIG. 6. (See page 8, lines 9-10 of the specification regarding the addition of silicide layer 122.) The specification has also been amended to include mention of the reference labels 53 and 115. No new matter has been added. Applicants have also amended the specification to provide additional clarity.

The Examiner rejected claims 1, 3-5, 7, and 8 under 35 U.S.C. §112, second paragraph. As noted above, claims 1, 3-5, 7, and 8 have been cancelled. As a result, the claims are believed to satisfy the requirements of the second paragraph of section 112.

The Examiner rejected claims 1, 3-5, 7-9, 13, 15, 18, 21, and 24 under 35 U.S.C. §103(a) as being unpatentable over Ibi et al. (U.S. Patent No. 5,955,766) in view of Cervin-Lawry (U.S. Patent No. 6,218,722). The Examiner also rejected claims 5 and 8 under 35 U.S.C. §103(a) as being unpatentable over Ibi et al. in view of Cervin-Lawry and further in view of applicants' prior art. As noted above, claims 1, 3-5, 7-9, 13, 15, 18, 21, and 24 have been cancelled.

New claim 25 recites:

- a buried layer having a first conductivity type;
- an epitaxial region formed on the buried layer, the epitaxial region having a surface and including:
 - a first region of a first conductivity type that contacts the buried region and the surface, and
 - a second region of a second conductivity type that contacts the surface and the first region, the second region including all contiguous regions that have the second conductivity type, no region of a first conductivity type being enclosed between the second region and the surface;
- a first conductor formed on the surface to make an electrical connection with the first region; and
- a second conductor formed on the surface, the second conductor contacting the second region, and being spaced apart from the first conductor.

From what applicants can determine, there is no structure in Ibi or Cervin-Lawry that can be read to be the buried layer required by new claim 25. With respect to Ibi, if p-well 12 shown in FIG. 2 of Ibi is read to be the first region of the first conductivity type, and N+ region 14 shown in FIG. 2 of Ibi is read to be the second region of the second conductivity type, then Ibi fails to teach a buried layer of the first conductivity type (p-type) that is connected to the first region (p-well 12) because Ibi teaches that n-substrate 11 is connected to p-well 12 (the first region).

With respect to Cervin-Lawry, if p-base region 124 shown in FIG. 10 of Cervin-Lawry is read to be the first region of the first conductivity type, and emitter region 148 shown in FIG. 10 of Cervin-Lawry is read to be the second region of the second conductivity type, then Cervin-Lawry fails to teach a buried layer of the first conductivity type (p-type) that is connected to the first region (p-base 124) because Cervin-Lawry teaches that the n- collector region (unlabeled) and the n+ buried layer (unlabeled) are connected to p-base 124 (the first region).

Thus, since neither Ibi nor Cervin-Lawry teach or suggest a buried layer, claim 25 is patentable over Ibi in view of Cervin-Lawry. In addition, since claims 26-38 depend either directly or indirectly from new claim 25, these claims are patentable over Ibi in view of Cervin-Lawry for the same reasons as claim 25. Method claim 52, which recites similar limitations, is also patentable over Ibi in view of Cervin-Lawry for the same reasons as claim 25. Further, since claims 53-55 depend either directly or indirectly from new claim 52, these claims are patentable over Ibi in view of Cervin-Lawry for the same reasons as claim 52.

New claim 39 recites:

a semiconductor material having a surface and including:
a first region of a first conductivity type that contacts the
surface, and

a second region of a second conductivity type that contacts the surface and the first region, the second region including all contiguous regions that have the second conductivity type, no region of a first conductivity type being enclosed between the second region and the surface, the first region including a third region that lies vertically below all of the second region, has the first conductivity type, and has a substantially uniform dopant concentration, and

a first conductor formed on the surface to make an electrical connection with the first region, the first conductor having the first conductivity type and a dopant concentration, the dopant concentration of the third region and the dopant concentration of the first conductor being substantially equal; and

a second conductor formed on the surface, the second conductor contacting the second region, having the second conductivity type, and being spaced apart from the first conductor.

From what applicants can determine, there is no structure in Ibi or Cervin-Lawry that can be read to be the third region required by new claim 39. With respect to Ibi, assume p-well 12 shown in FIG. 2 of Ibi is read to be the first region of the first conductivity type, and N+ region 14 shown in FIG. 2 of Ibi is read to be the second region of the second conductivity type.

Further assume that the first conductor is read to be the aluminum interconnection 15 that is connected to p+ region 13 (referred to as the left interconnection 15), and the second conductor is read to be the aluminum interconnection 15 that is connected to n+ region 14 (referred to as the right interconnection 15). In this example, applicants can find nothing in Ibi that teaches that the third region, i.e., the region of p-well 12 lying below n+ region 14, has substantially the same dopant concentration as the left interconnection 15, even if the left interconnection 15 were formed from polysilicon.

With respect to Cervin-Lawry, assume that p-base region 124 shown in FIG. 10 of Cervin Lawry is read to be the first region of the first conductivity type, and emitter region 148 shown in FIG. 10 of Cervin-Lawry is read to be the second region of the second conductivity type. Further assume that the first conductor is read to

be poly layer 118 that is connected to p-base 124, and the second conductor is read poly layer 120 that is connected to emitter region 148. In this example, applicants can find nothing in Cervin-Lawry that teaches that the third region, i.e., the region of p-base 124 lying below emitter region 148, has substantially the same dopant concentration as poly layer 118 (the first conductor).

Thus, since neither Ibi nor Cervin-Lawry teach or suggest a third region, claim 39 is patentable over Ibi in view of Cervin-Lawry. In addition, since claims 40-51 depend either directly or indirectly from new claim 39, these claims are patentable over Ibi in view of Cervin-Lawry for the same reasons as claim 39. Method claim 56, which recites similar limitations, is also patentable over Ibi in view of Cervin-Lawry for the same reasons as claim 39. Further, since claims 57-59 depend either directly or indirectly from new claim 56, these claims are patentable over Ibi in view of Cervin-Lawry for the same reasons as claim 56.

Thus, for the foregoing reasons, it is submitted that all of the claims are in a condition for allowance. Therefore, the Examiner's early re-examination and reconsideration are respectively requested.

Respectfully submitted,

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